

CLAIMS

1. A hydraulic valve for controlling flow rate or pressure including at least one translationally mobile flap between a close position in contact with the seat and an open position at a distance from the latter, the displacement of said flap being driven by a piezoelectric part, characterized  
5 in that said part is a ring disc.

2. The hydraulic valve according to the preceding claim, characterized in that the axis of the ring disc is parallel to the axis of translation of the flap.

3. The hydraulic valve according to any of the preceding claims,  
10 characterized in that a first needle is fixed to said ring disc, capable of blocking a first port connecting a low pressure hydraulic chamber to a high pressure hydraulic chamber, the flap consisting of a second needle blocking a second port connecting the high and low pressure chambers respectively.

4. The hydraulic valve according to the preceding claim,  
15 characterized in that the first needle is fixed at the centre of the ring disc, and has a displacement axis coinciding with the axis of the ring disc.

5. The hydraulic valve according to any of claims 3 and 4, characterized in that the flap is mobile and translationally guided between its seat and an abutment located along the axis of its displacement, opposite  
20 said seat.

6. The hydraulic valve according to any of claims 3 to 5, characterized in that the second needle forming the flap includes an axial cavity open on the outside.

7. The hydraulic valve according to the preceding claim ,  
25 characterized in that said cavity includes two apertures respectively positioned opposite and in proximity to the portion of the needle cooperating with the seat of the flap, in the same hydraulic chamber.

8. The hydraulic valve according to any of claims 3 to 7, characterized in that the access to the first port in the high pressure chamber  
30 is partially blocked for the fluid by a part restricting the passage of the fluid to a channel, with a diameter less than that of said first port.

9. The hydraulic valve according to any of claims 3 to 8, characterized in that the first needle is located in the low pressure hydraulic chamber.

5 10. The hydraulic valve according to any claims 1 and 2, characterized in that the flap consists of a needle fixed to the ring disc, and capable of blocking a single port connecting a high pressure hydraulic chamber to a low pressure hydraulic chamber.

10 11. The hydraulic valve according to any of the preceding claims, characterized in that the needle forming a flap is located in the high pressure chamber.

12. The hydraulic valve according to any of the preceding claims, characterized in that the piezoelectric ring disc is located in the low pressure hydraulic chamber.

15 13. The hydraulic valve according to any of claims 3 to 12, characterized in that a spring is applied against the piezoelectric ring disc, exerting a return force stressing said ring disc in the direction of the closing of the port controlled by the needle which is fixed to it.

20 14. The hydraulic valve according to any of the preceding claims, characterized in that the flap is closed when the voltage across the terminals of the piezoelectric ring disc is zero.

15. The hydraulic valve according to the preceding claim, characterized in that the ring disc, at zero voltage, is deformed so that it has a concavity directed towards the needle which is fixed to it.

25 16. The hydraulic valve according to any of the preceding claims, characterized in that the ring disc has ports distributed over its crown.